

V&V Reference Report

L2 ASCDS Version : 10.7.1

Observation 22099 - L2 Version 2
Chandra X-Ray Center

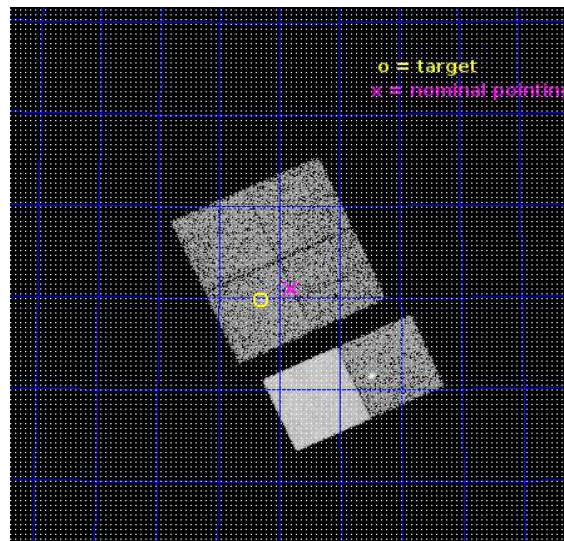
L2 Processing Date : Feb 21 2019

Contents

1	Front	2
2	OBI	3
2.1	OBI	3
2.1.1	Images	3
2.1.2	Bias	3
2.1.3	Parameters	4
2.1.4	Events	4
2.2	Compared Parameters	5
2.3	Aspect	6
2.4	Star Slots	9
2.4.1	Slot 3	9
2.4.2	Slot 4	10
2.4.3	Slot 5	11
2.4.4	Slot 6	12
2.5	FID Slots	13
2.5.1	Slot 0	13
2.5.2	Slot 1	14
2.5.3	Slot 2	15
A	Summary	16
A.1	Status	16
A.2	Comments	16

1 Front

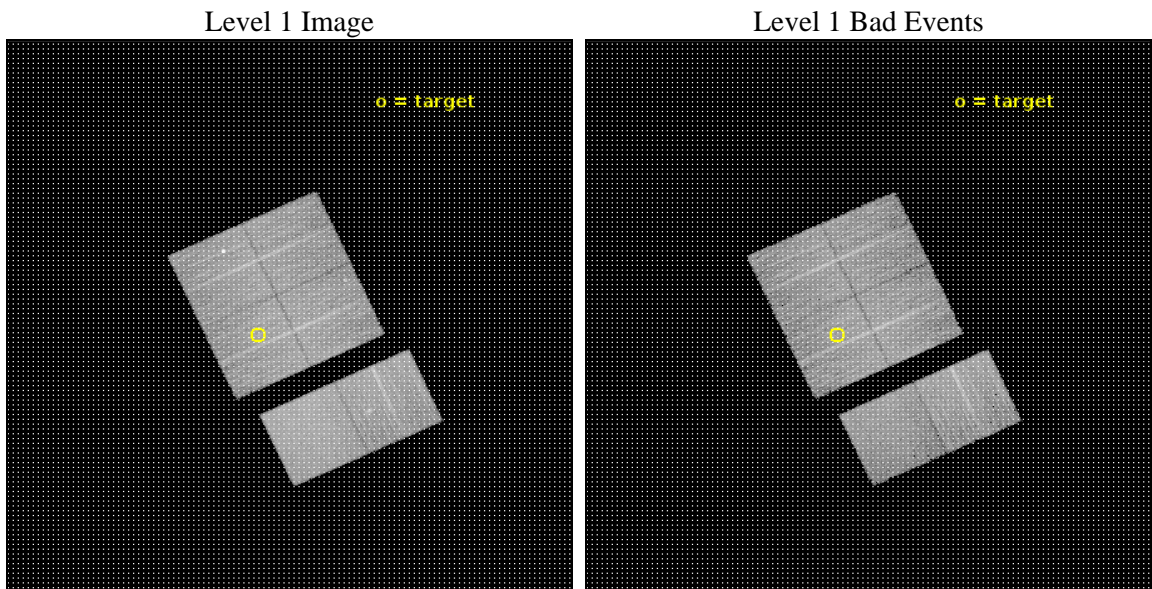
seq_num	801767	Sequence number
obs_id	22099	Observation id
title	The Chandra Strong Lens Sample: Revealing Baryonic Physics In Strong Lensing Selected Clusters	Proposal title
observer	Matthew Bayliss	Principal investigator
object	SDSSJ1110+6459	Source name
dtcycle	0	
cycle	P	events from which exps? Prim/Second/Both
ra_targ	167.575	Observer's specified target RA [deg]
dec_targ	64.996389	Observer's specified target Dec [deg]
ra_nom	167.44986982609	Nominal RA [deg]
dec_nom	65.01700823039	Nominal Dec [deg]
roll_nom	155.32207891262	Nominal Roll [deg]
revision	2	Processing version of data
ontime	10950.400163174	Sum of GTIs [s]
livetime	10811.739602768	Livetime [s]
ontime0	10950.400163174	Sum of GTIs [s]
ontime1	10950.400163174	Sum of GTIs [s]
ontime2	10940.676882029	Sum of GTIs [s]
ontime3	10950.400163174	Sum of GTIs [s]
ontime6	10950.400163174	Sum of GTIs [s]
ontime7	10950.400163174	Sum of GTIs [s]
l2events	84235	Number of level 2 events



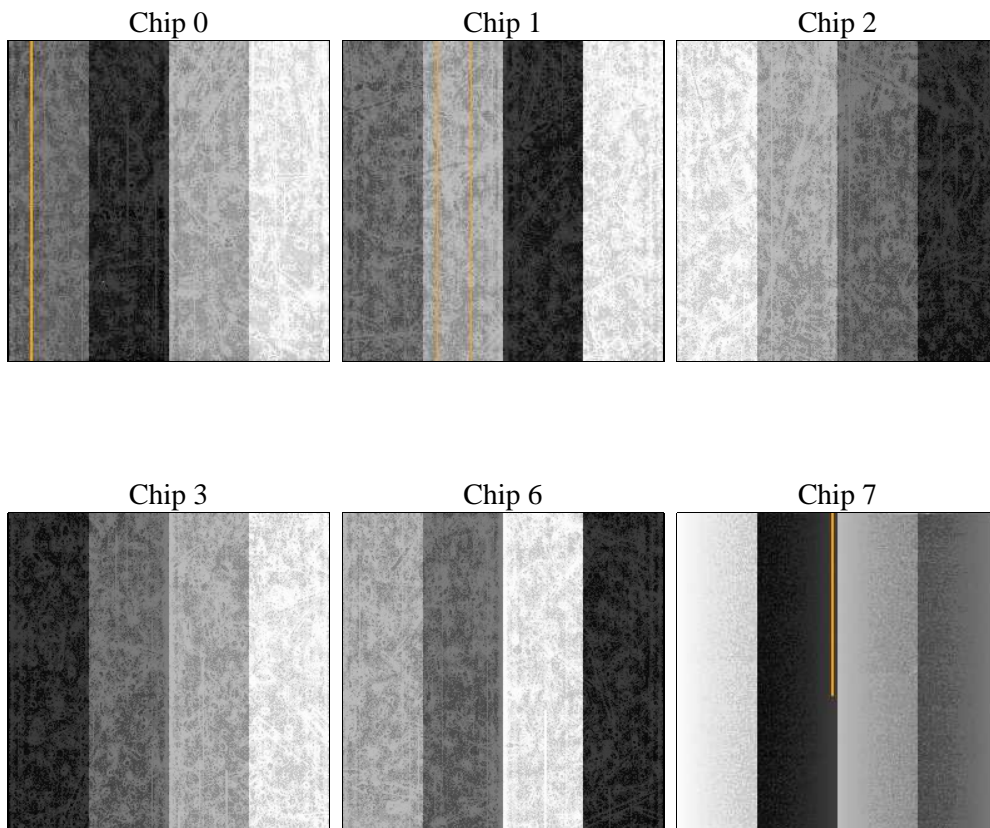
2 OBI

2.1 OBI

2.1.1 Images



2.1.2 Bias



2.1.3 Parameters

obi_num	0	Obi number	sched_exp_time	11000.000000	[s] Scheduled observation exposure time
ascdsver	10.7.1	Processing system revision	ontime	10950.400163174	Sum of GTIs [s]
caldsver	4.8.2	 	ontime0	10950.400163174	Sum of GTIs [s]
date	2019-02-21T22:17:42	Date and time of file creation	ontime1	10950.400163174	Sum of GTIs [s]
revision	2	Processing version of data	ontime2	10940.676882029	Sum of GTIs [s]
			ontime3	10950.400163174	Sum of GTIs [s]
			ontime6	10950.400163174	Sum of GTIs [s]
			ontime7	10950.400163174	Sum of GTIs [s]
			l1events	531052	Number of level 1 events

2.1.4 Events

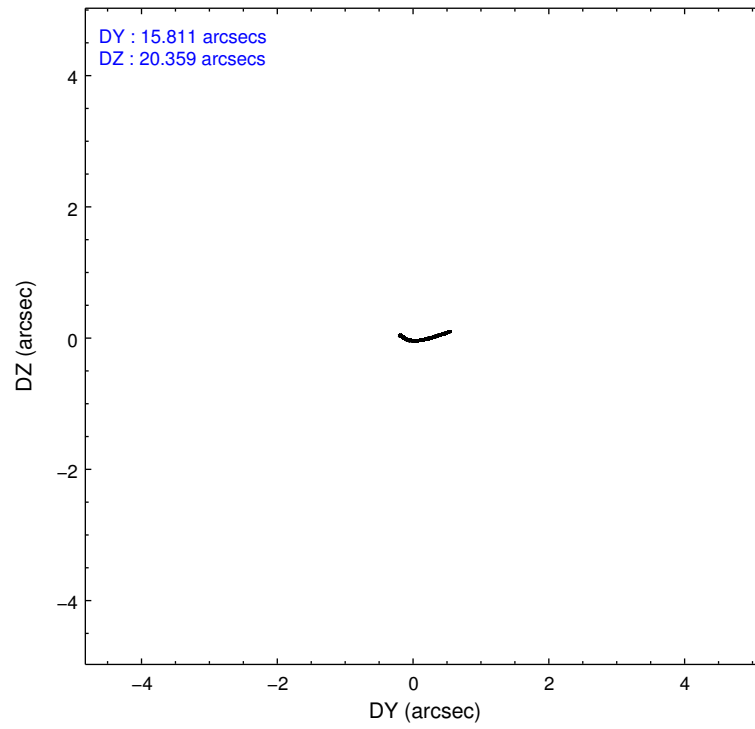
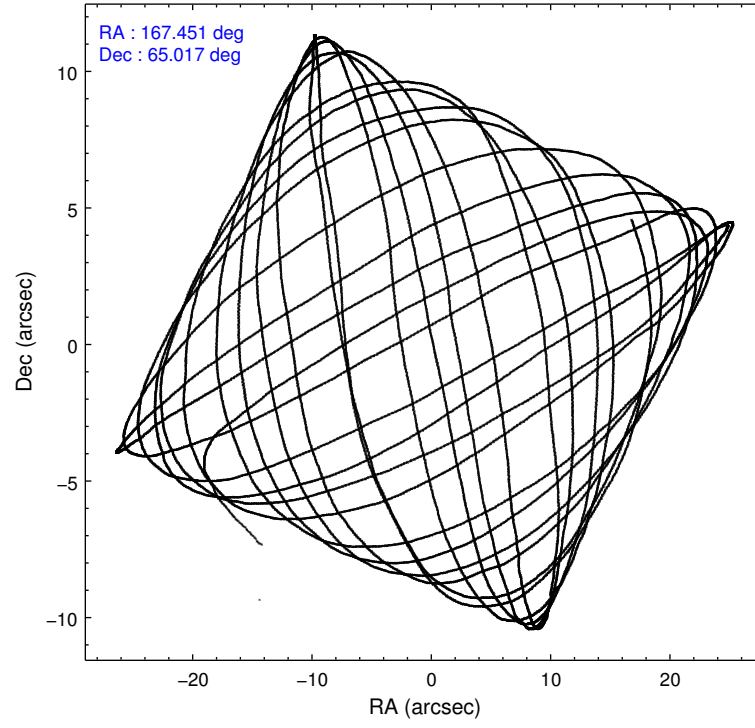
	ccd 0	ccd 1	ccd 2	ccd 3	ccd 6	ccd 7		ccd 0	ccd 1	ccd 2	ccd 3	ccd 6	ccd 7
level 1 events	75346	85061	85885	84866	91969	107925	grade 0 events	3004	5992	3477	3276	3459	3761
rejected events	66346	72352	76941	76036	81585	61888		3%	7%	4%	3%	3%	3%
rejected %	88%	85%	89%	89%	88%	57%	grade 1 events	35	82	78	38	43	157
								0%	0%	0%	0%	0%	0%
							grade 2 events	2309	2485	1995	1915	2659	9723
								3%	2%	2%	2%	2%	9%
							grade 3 events	846	841	892	858	869	3606
								1%	0%	1%	1%	0%	3%
							grade 4 events	846	887	818	878	876	3442
								1%	1%	0%	1%	0%	3%
							grade 5 events	3259	3401	3260	3755	3687	10558
								4%	3%	3%	4%	4%	9%
							grade 6 events	1998	2511	1764	1904	2528	25536
								2%	2%	2%	2%	2%	23%
							grade 7 events	63049	68862	73601	72242	77848	51142
								83%	80%	85%	85%	84%	47%

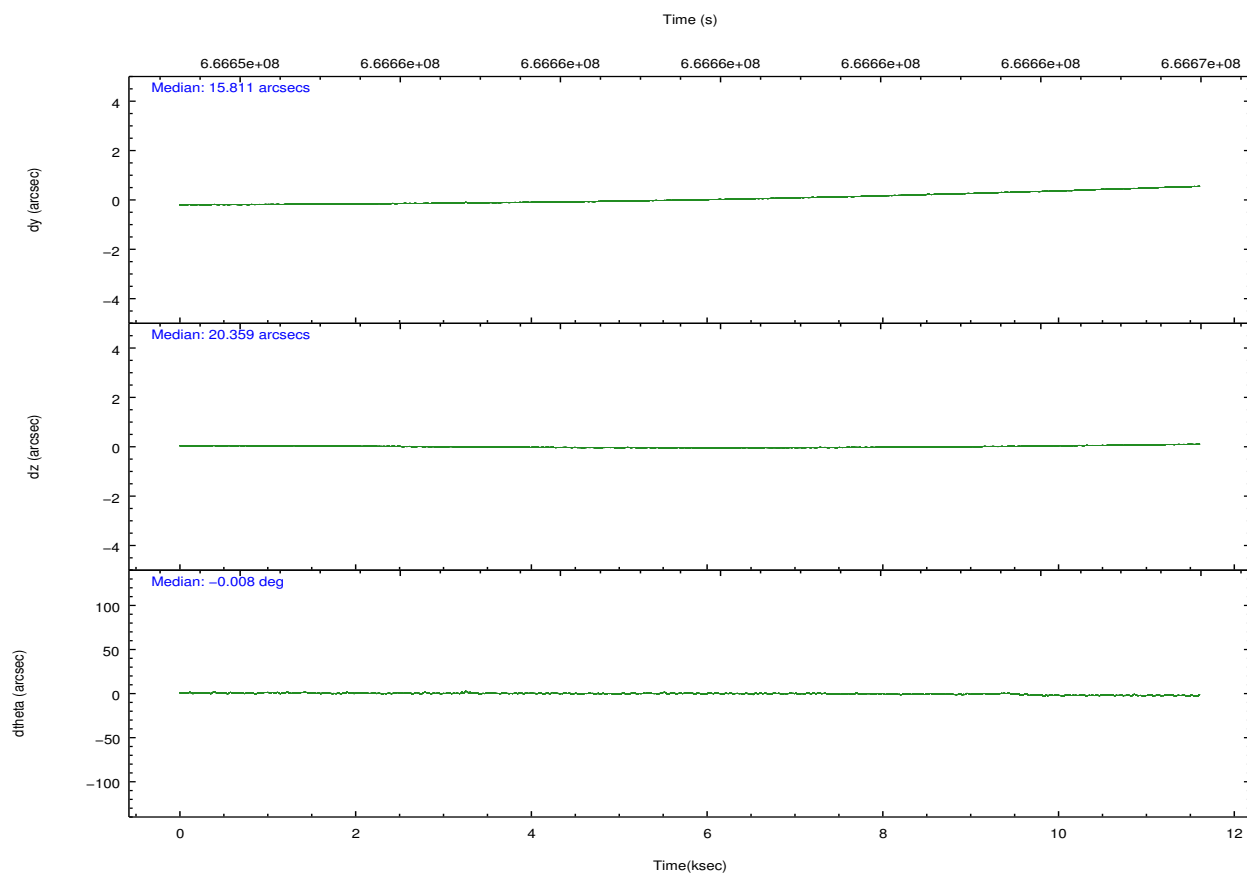
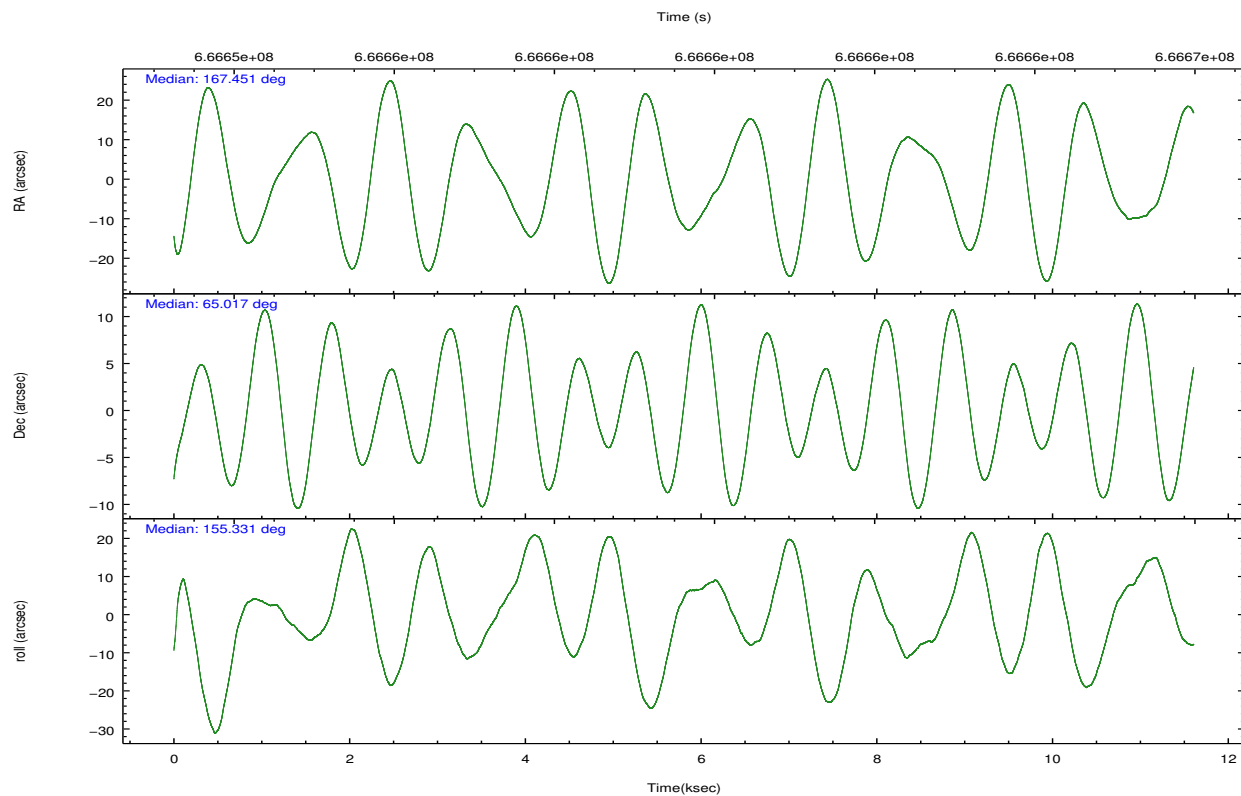
2.2 Compared Parameters

Parameter	Planned	Actual
Instrument	ACIS	ACIS
Detector	ACIS-012367	ACIS-012367
Grating	NONE	NONE
Data mode	VFAINT	VFAINT
Observation mode	POINTING	POINTING
[deg] Pointing RA	167.514866	167.4498698260949
[deg] Pointing Dec	65.019704	65.01700823038976
[deg] Pointing Roll	155.054490	155.3220789126194
[mm] SIM focus pos	-0.782348	-0.7809083437167272
[mm] SIM defocus	0	0.001439871863259334
[mm] SIM translation stage pos	-225.840463	-225.8433433320239
[mm] SIM translation stage offset	-7.752	-7.749109670905796
[s] Observation start time (MET)	666654423.184000	666653249.5989701
Observation start date	2019-02-15T21:45:54	2019-02-15T21:27:29
[s] Observation end time (MET)	666665423.184000	666666022.12473
Observation end date	2019-02-16T00:49:14	2019-02-16T01:00:22
Read mode	TIMED	TIMED

Parameter	Planned	Actual
Obspar format version number	7	7
Obspar file type	PREDICTED	ACTUAL
Obspar update status	NONE	UPDATED
CCD I0 on	Y	Y
CCD I1 on	Y	Y
CCD I2 on	Y	Y
CCD I3 on	Y	Y
CCD S0 on	N	N
CCD S1 on	N	N
CCD S2 on	O1	Y
CCD S3 on	O2	Y
CCD S4 on	N	N
CCD S5 on	N	N
Number of optional ACIS chips dropped	0	0
On-chip summing requested	N	N
Subarray requested	NONE	NONE
Alternating exposures requested	N	N
[s] Primary exposure time	0.000000	3.2

2.3 Aspect



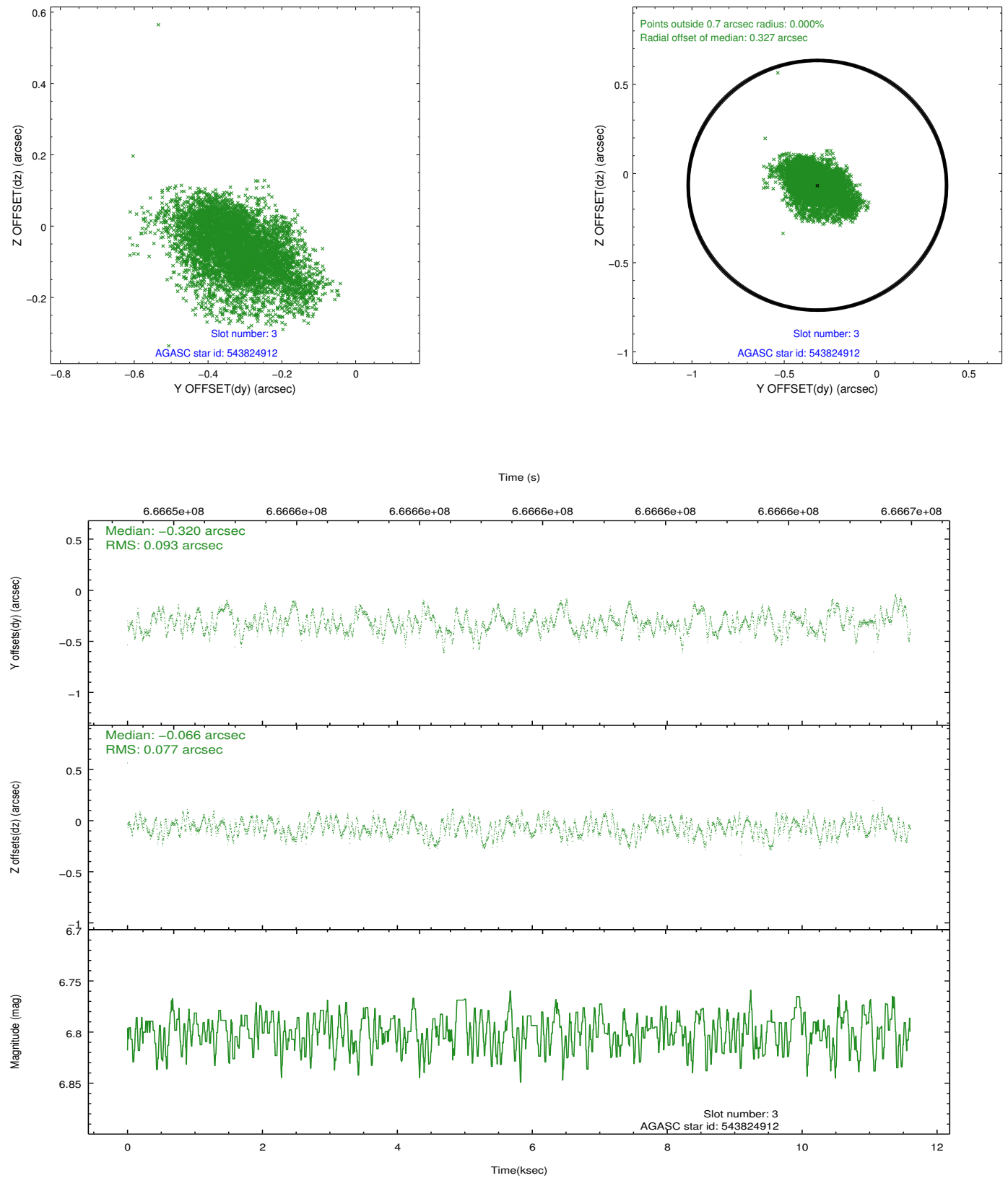


Slot Statistics

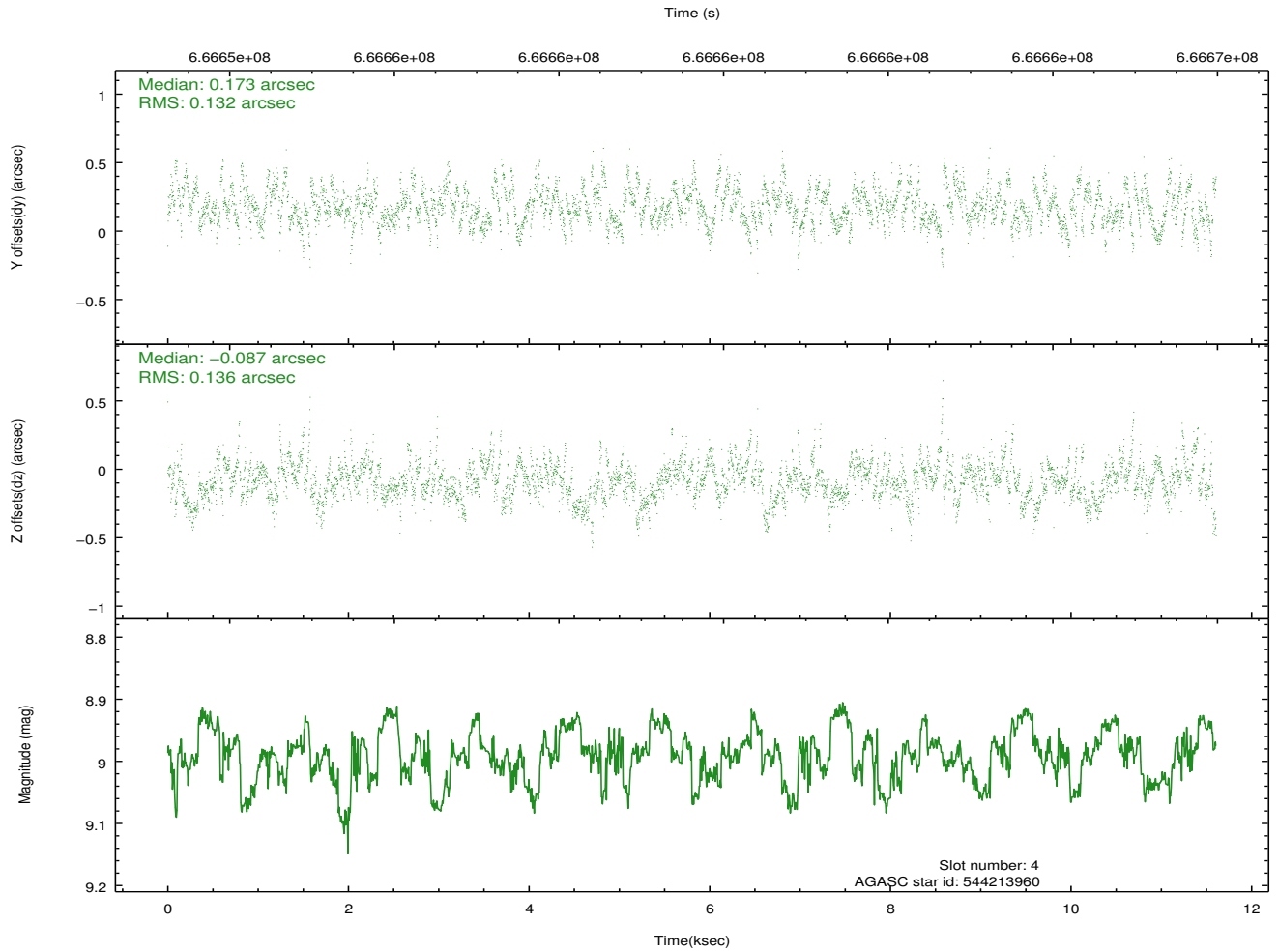
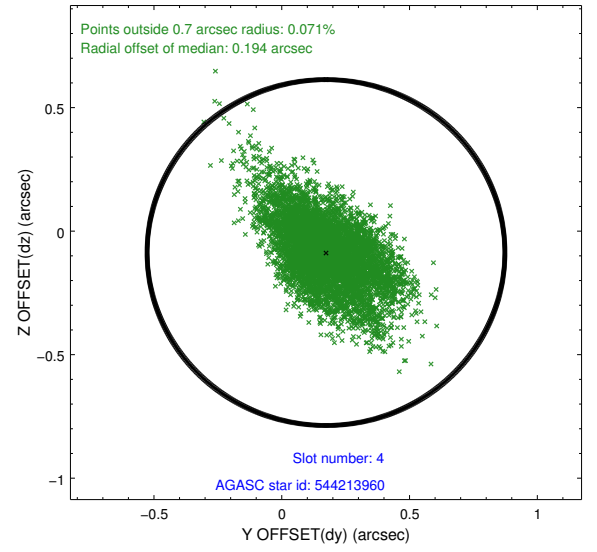
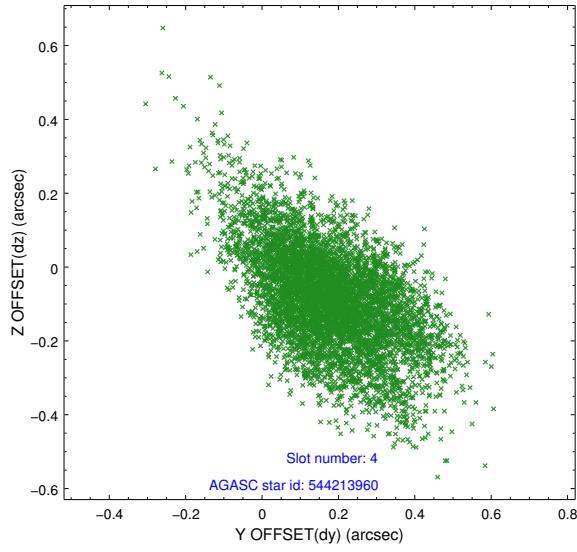
pt	status	used	id	mag	n_pts	frac_pts	med_dy	med_dz	dr1	dr2	ra	dec	mean_y	mea
0	FID		ACIS-I-1	7.24	2831	1.000	0.167	-0.193	0.011	0.018	0.000000	0.000000	923.69	-1003
1	FID		ACIS-I-5	7.26	2829	1.000	-0.568	0.042	0.011	0.019	0.000000	0.000000	-1825.11	893
2	FID		ACIS-I-6	7.29	2831	1.000	0.310	0.222	0.008	0.013	0.000000	0.000000	388.63	1539
3	GUIDE	used	543824912	6.80	5663	1.000	-0.320	-0.066	0.128	0.210	169.006588	64.907619	-2223.22	-617
4	GUIDE	used	544213960	8.99	5654	1.000	0.173	-0.087	0.192	0.340	166.895162	65.845135	2083.37	-2312
5	GUIDE	used	544215472	8.38	5655	1.000	0.034	-0.035	0.165	0.287	166.827280	65.749686	2033.49	-1958
6	GUIDE	used	544216256	9.69	5657	1.000	0.094	0.162	0.263	0.465	169.100952	65.246288	-1811.75	-1772
7	OMITTED			0.00	0	0.000	0.000	0.000	0.000	0.000	0.000000	0.000000	0.00	0

2.4 Star Slots

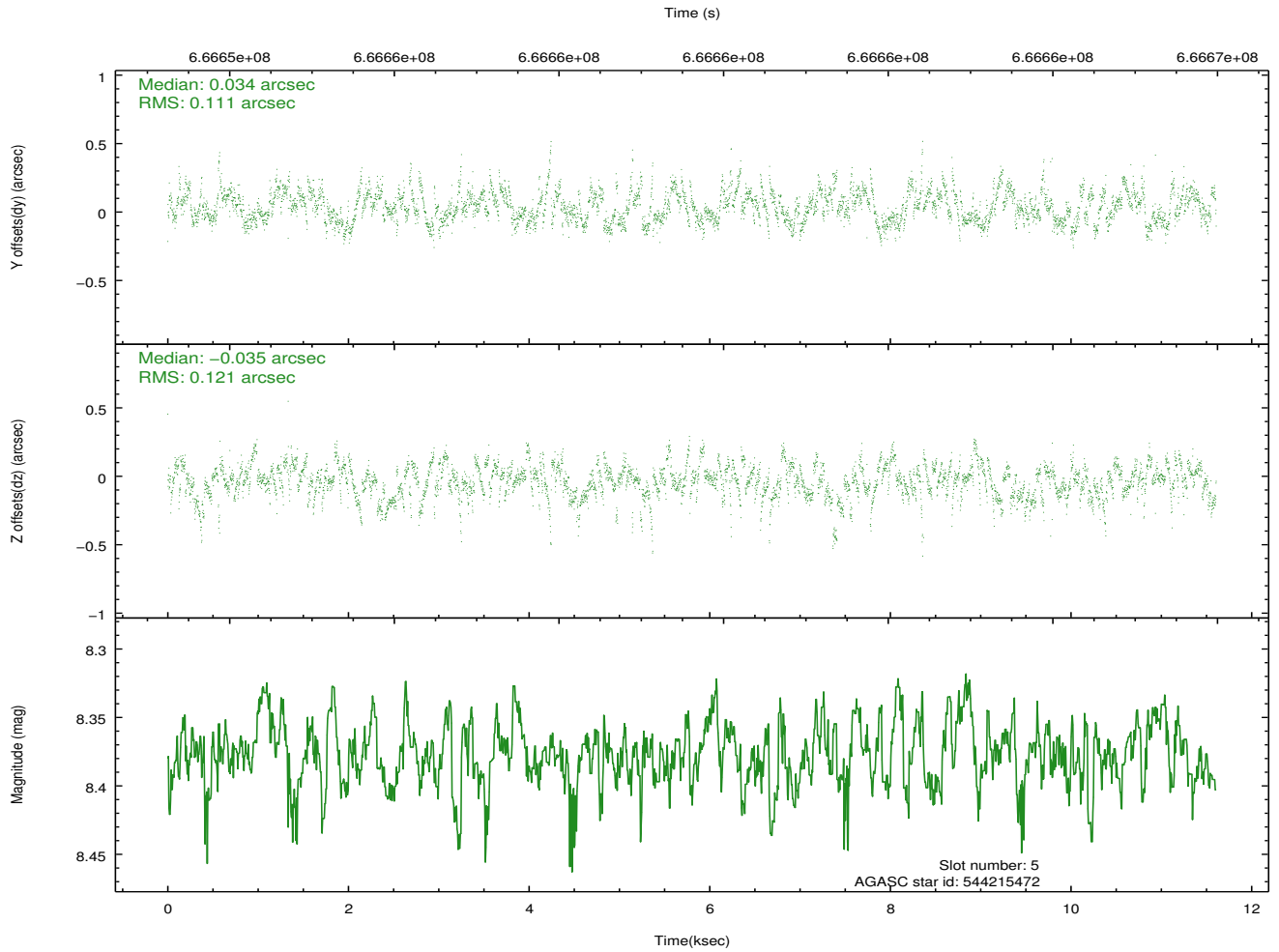
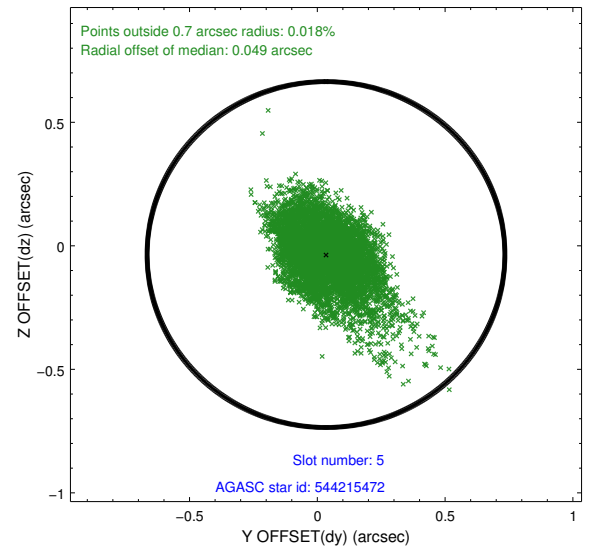
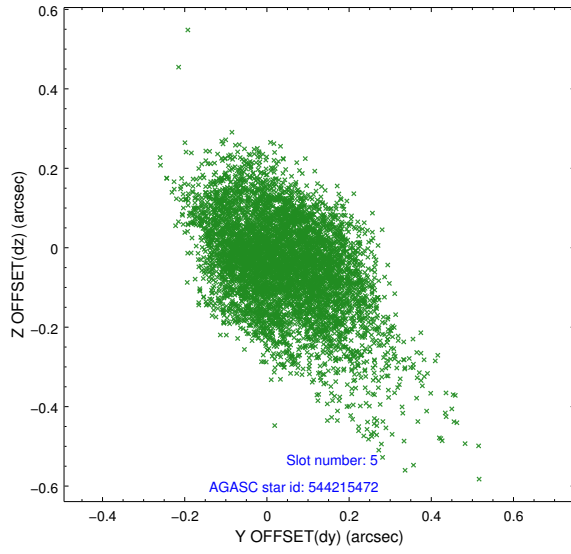
2.4.1 Slot 3



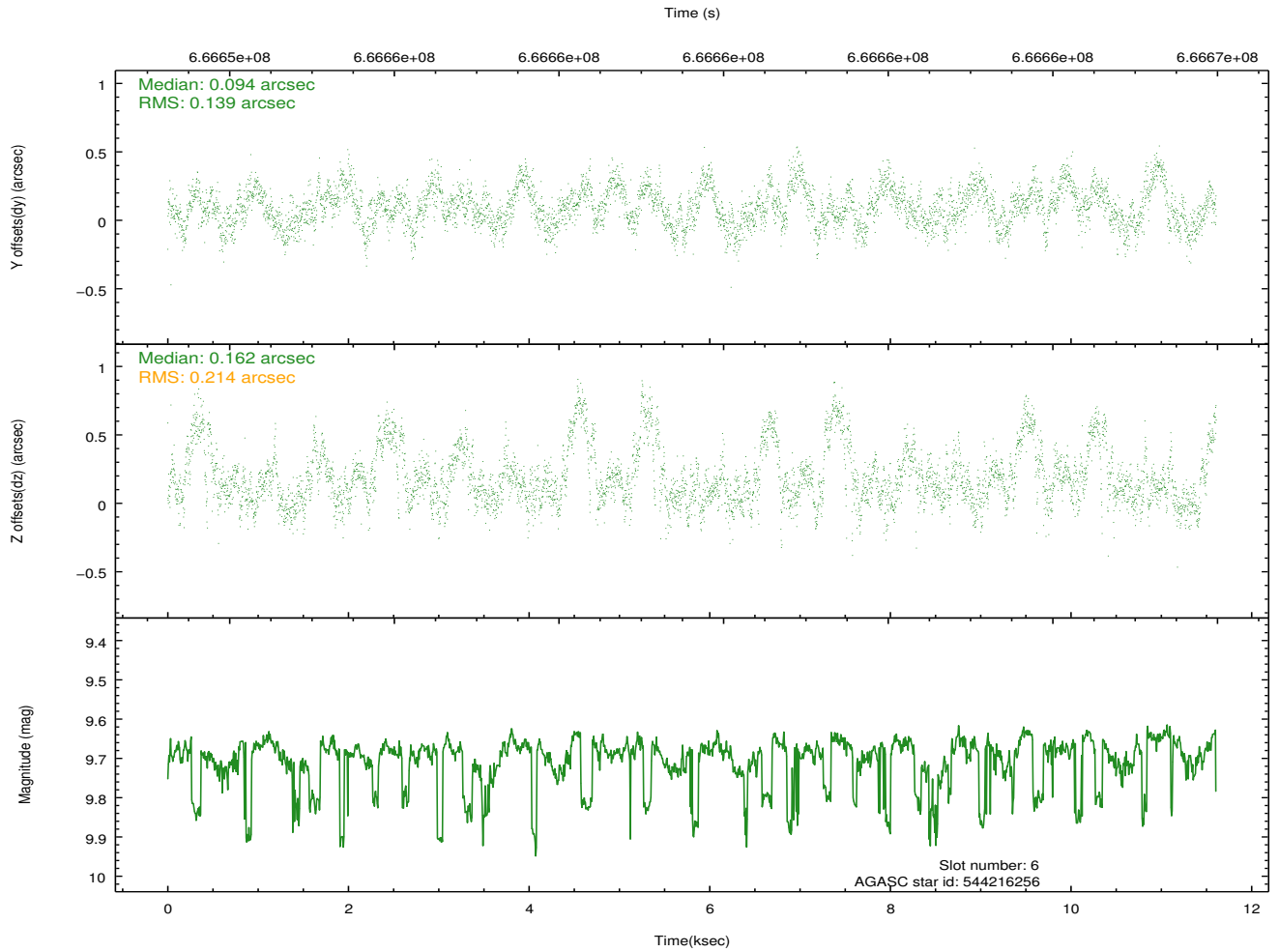
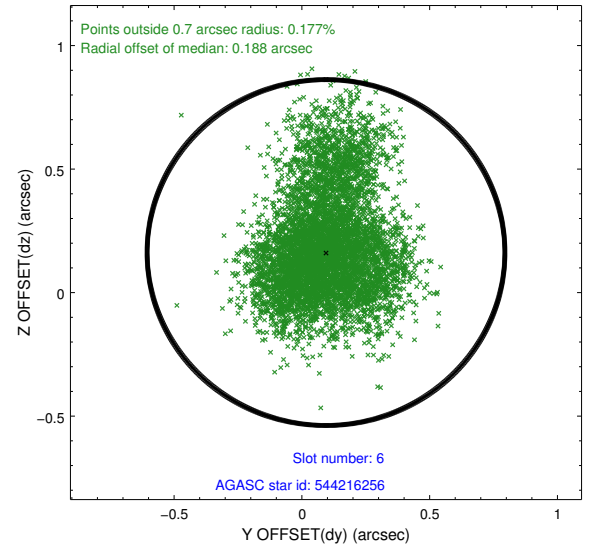
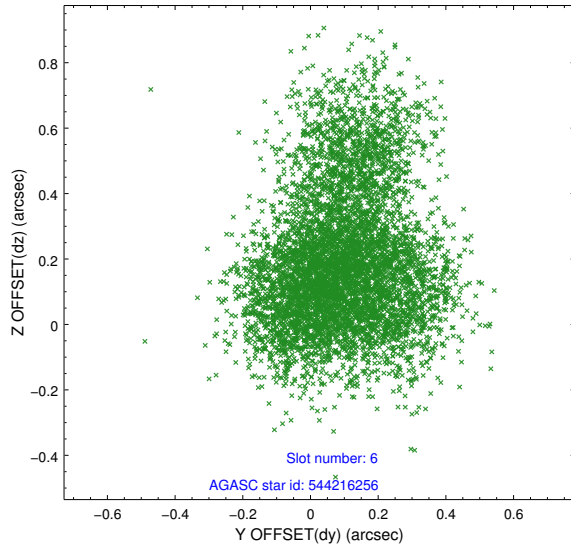
2.4.2 Slot 4



2.4.3 Slot 5

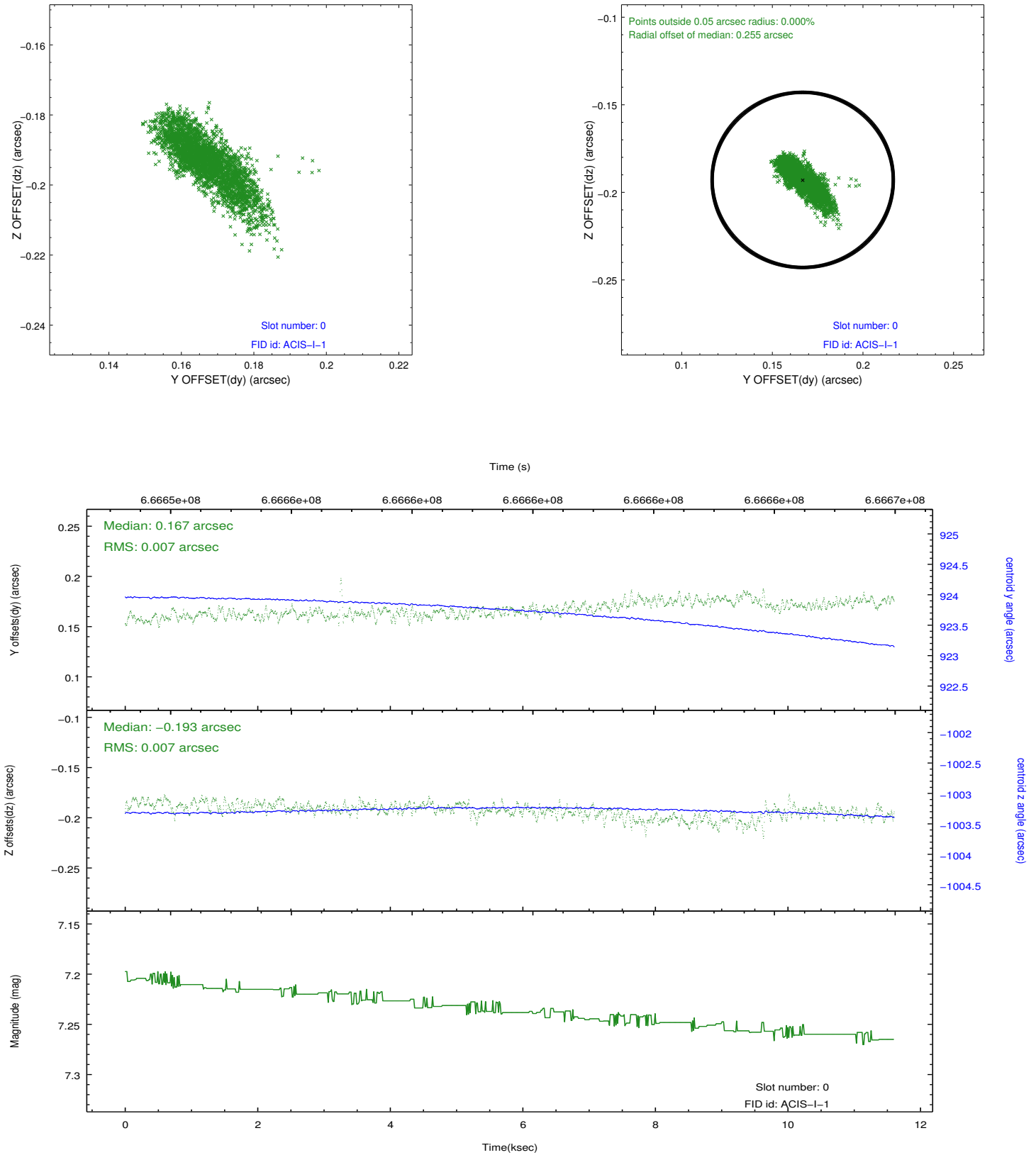


2.4.4 Slot 6

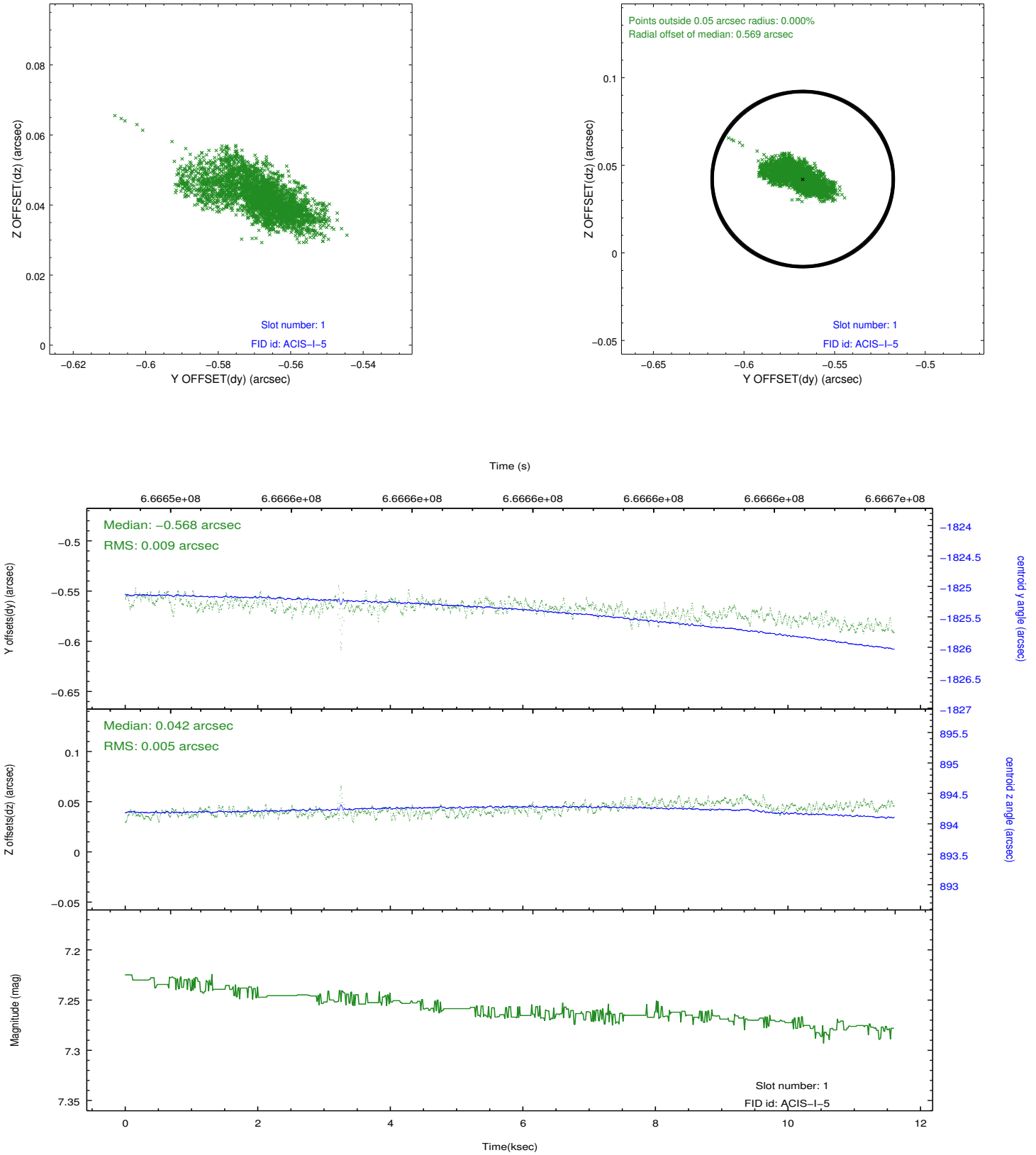


2.5 FID Slots

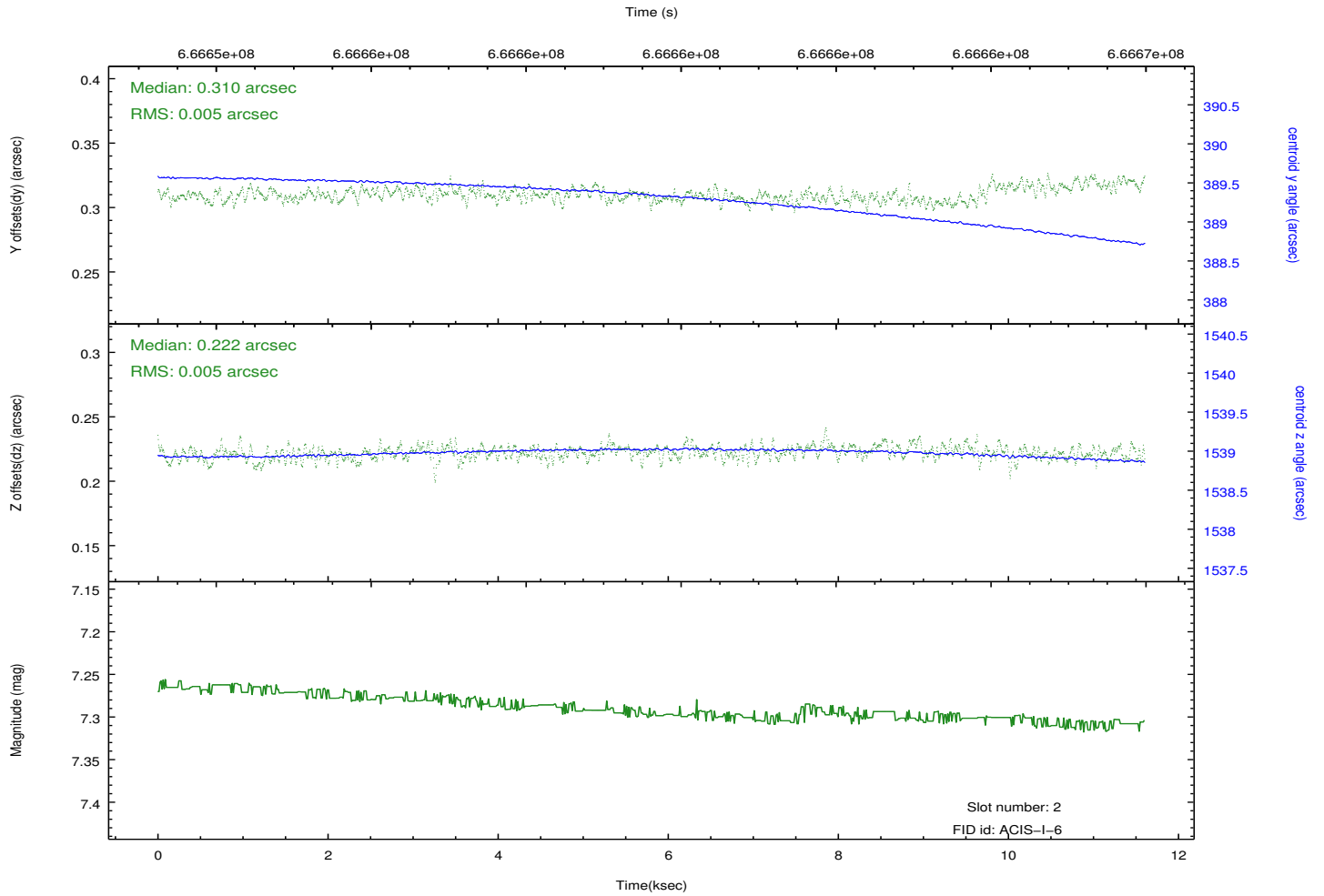
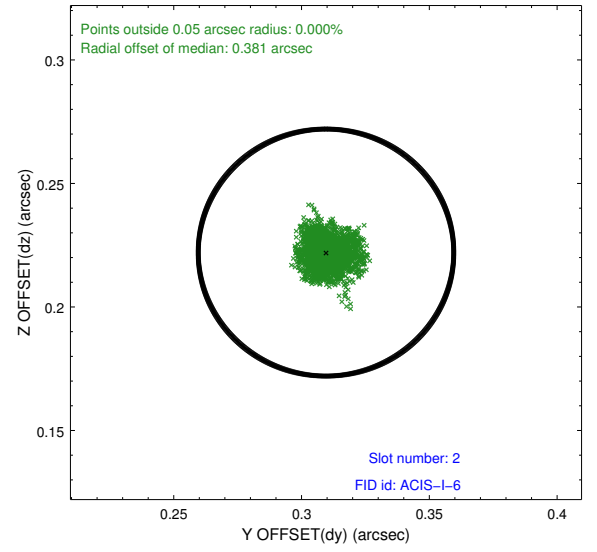
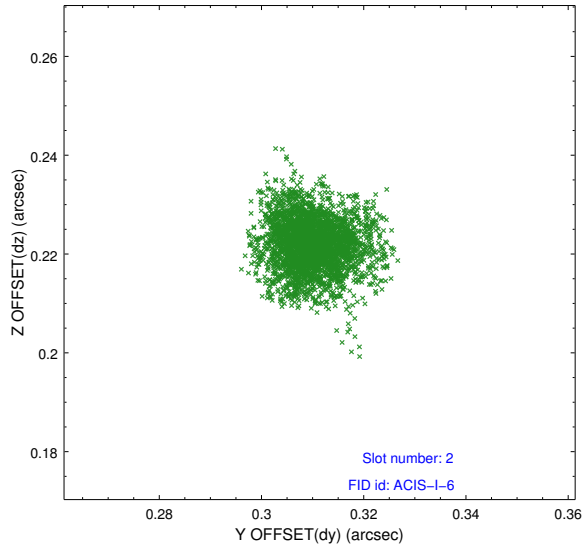
2.5.1 Slot 0



2.5.2 Slot 1



2.5.3 Slot 2



A Summary

A.1 Status

V&V Scientist	Beth Sundheim
V&V Date (YYYY-MM-DD)	2019.02.21
V&V Edition	1
V&V Disposition and Status	OK
V&V Charge Time	10.950400163174

A.2 Comments

Joint proposal with HST.

==

The guide star in slot 7 was removed from the aspect solution due to poor data quality. The aspect solution is improved by the removal of this slot from the solution.

==

The focal plane temperature during part of this observation was warmer than the upper limit for optimum calibration of the ACIS gain and spectral resolution (i.e., -114.0 C for ACIS-I and -112.0 C for ACIS-S).

The Chandra calibration team calibrates the ACIS gain and spectral resolution using data from the external calibration source (ECS). ECS data show that the frontside-illuminated (FI) CCDs are more temperature sensitive than the backside-illuminated (BI) CCDs.

A summary of the current calibration status of the ACIS gain and spectral resolution can be found at:

http://asc.harvard.edu/cal/Acis/Cal_prods/Gain_and_Spectral_Resolution/ACIS_response_summary.html

The main points are:

- 1) The gain on BI chips remains within 0.3% (i.e., the systematic uncertainty in the ACIS gain quoted on the Chandra Calibration Status Summary web page) at all measured temperatures.
 - 2) The gain on FI chips remains within 0.3% below row 600 at all measured temperatures.
 - 3) The gain on FI chips above row 600 can be underestimated by as much as 1% for focal plane temperatures exceeding -116 C.
 - 4) The spectral resolution (i.e., FWHM) on BI chips is insensitive to the focal plane temperature.
 - 5) Warmer focal plane temperatures increase the FWHM on FI chips by up to 30 eV near row 512 and by up to 70 eV near the top of the chips.
- In summary, the user should be cautious in the spectral analysis of high S/N emission lines detected on the top half of FI chips in this observation. Default processing with the current version of the CALDB will underestimate photon energies by up to 1% and broaden emission lines by up to 70 eV.